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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,051	03/30/2004	Shinji Miwa	118943	1413
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HUNG, YUBIN				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/812,051

Applicant(s)

MIWA ET AL.

Examiner

YUBIN HUNG

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3, 5, 7 and 9-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5, 7 and 9-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Response to Amendment/Arguments

1. This action is in response to amendment filed on 12/16/08, which has been entered.
2. Claims 1, 3, 5, 7 and 9-18 are still pending.
3. Applicant's amendment has not overcome the 35 USC § 101 rejections of claims 13-15. Therefore the rejections are maintained.
4. In view of Applicant's amendment, the 35 USC § 103 rejections of claims 1, 3, 5, 7 and 9-18 have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sharon et al. ("Segmentation and boundary detection using multiscale intensity measurements", IEEE Proc. on 2001 CVPR, Vol. 1, pp. 469-476).

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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6. Claims 13-15 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory “process” under 35 U.S.C. 101 must (1) be tied to a particular machine or apparatus, or (2) transform a particular article to a different state or thing. This is referred to as the “machine or transformation test”, whereby the recitation of a particular machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility (See *Benson*, 409 U.S. at 71-72), and the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity (See *Flook*, 437 U.S. at 590”). While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform an article nor positively tie to a particular machine that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

7. Specifically, as currently claimed the steps such as region segmentation and image segmentation of claim 13 could be performed manually, albeit time-consuming, and does not require machine involvement. Furthermore, the claims do not recite a qualifying transformation of data because there is no recitation of an external (non-data) representation of the physical object or substance, such

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

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as a visual depiction of the corrected image. Therefore, neither of the requirements for a process has been met.

[Note: While the claims have been amended to include the language "for a computer-readable medium" in the preamble, that at best only indicates intended use. Moreover, the recited medium is a storage device that cannot perform the method. Therefore the amended method is not tied to a machine or apparatus. Applicant is advised to amend the claim to include language such as "wherein all of the steps above are performed by a computer" at the end of the claim to positively tie the method to an apparatus.]

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 3, 5, 7 and 9-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herley (US 2002/0146173), and further in view of Tsukada (US 7,016,075), Miyabata et al. (5,418,574) and Sharon et al. ("Segmentation and boundary detection using multiscale intensity measurements", IEEE Proc. on 2001 CVPR, Vol. 1, pp. 469-476).

10. Regarding claim 1, and similarly claims 13 and 16, Herley discloses
- a region segmentation device that segments a target image composed of a plurality of pixels into a plurality of image object regions by employing, as boundaries, portions where characteristics between the pixels change [Fig. 1, ref. 102 (considered as the device); Fig. 6; paragraphs 5, 14-18 and 51]

Herley does not expressly disclose the following, which is taught by Tsukada:

- an image correction device that corrects the pixel information of the pixels constituting the image object region based on region characteristic information indicating at least one of a standard deviation and a spatial frequency that represents a characteristic of the image object region, for each of the image object region a by the region segmentation device [Fig. 4; Col. 9, lines 12-29 & 44-45. Note that ref. 13 extracts representative color (a characteristic) for an object (i.e., region) and that plural (obviously including all) objects can be selected for correction (Col. 9, lines 44-45). Note further still that paragraphs 2-5 of Herley clearly suggest processing (e.g., highlighting) all segmented objects and color correction is a form of image processing]

The combined invention of Herley and Tsukada does not expressly disclose the following, which is taught by Miyabata

- wherein the image correction device corrects the pixel information of the pixels constituting the portions based on characteristic information of two image object regions that surround the portions

[Figs. 8b (with reference to Fig. 11a: color correcting region left of the boundary), 9b (color correcting region right of the boundary), 11a & 25 (color correcting boundary portion pixels); Col. 15, lines 32-62; Col. 17, lines 5-35; Col. 20, line 49-Col. 22, line 32. Note that pixels between (but not including) n1 and n2 are considered to be in the boundary portion with n1 and n2 respectively belonging to the two regions surrounding the boundary portion (see Fig. 11a). The colors, CD1 and CD2, respectively, of n1 and n2 (considered characteristic information of the two surrounding regions) are used to correct pixel information in the boundary portion, as can be seen from Fig. 25 and the equation on line 15 of column 21]

While the combined invention of Herley, Tsukada and Miyabata further discloses using the average value as the representative (i.e., characteristic) of an object (a region) [Tsukada: Col. 7, lines 46-60, especially 49-52], it does not expressly disclose that the characteristic is at least one of a standard deviation and a spatial frequency. However, Sharon teaches using variance, which is equivalent to standard deviation, in addition average, as a statistical measure (i.e., characteristic) of a segment, or region [P. 472, sects. 3.1 and 3.2].

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Herley with the teachings of Tsukada and Miyabata as recited above to obtain the invention as specified in claim 1. The reasons for doing so at least would have been to realize excellent color correction to obtain color reproduction favorable to a human, as Tsukada indicates in Col. 1, lines 15-21 and Col. 2, lines 49-53, to compensate for the unnatural emphasis on the contours resulted from color correction, as Miyabata indicates in Col. 20, lines 49-68, and also because variance is useful in characterizing isotropic surface elements, as Sharon indicates in lines 1-3 of Sect. 3.2.

11. Regarding claim 3, and similarly claims 14 and 17, Tsukada further discloses

- a region characteristic calculation device that calculates the region characteristic information of the image object region based on the pixel information of the pixels constituting the image object region [Fig. 4, ref. 13; Col. 9, lines 18-20]
- a correction function setting device that sets a correction function for correcting the pixel information of the pixels constituting the image object region based on the region characteristic information of the image object region calculated by the region characteristic calculation device

[Fig. 4, ref. 15 (correction function setting); Fig. 7; Col. 9, lines 22-26; Col. 10, lines 6-29 & 37-67. Note that each set of parameters determines a different (parameterized) correction function]

- a pixel information correction device that corrects the pixel information of the pixels constituting the image object region based on the correction function that was set by the correction function setting device

[Fig. 4, ref. 16; Col. 9, lines 27-30; Col. 10, lines 31-37]

12. Regarding claim 5, Tsukada further discloses that the correction function setting device maps the correction function with application conditions that define a plurality of the region characteristic information conditions [Figs. 6 & 7; Col. 10, lines 19-29] and retrieves the correction function corresponding to the application conditions that are satisfied by the region characteristic information from the plurality of correction functions based on the region characteristic information of the image object region [Fig. 8; Col. 10, lines 6-18].

13. Regarding claim 7, Tsukada further discloses that the correction function setting device retrieving the application conditions to which the region characteristic information of the image object region corresponds, based on a correction function table that maps and registers a plurality of application conditions and correction functions, and retrieves the correction function corresponding to the retrieved application conditions [Fig. 7 & 8; Col. 10, lines 6-

29; note that Fig. 7 is a correction function table and that the representative color of an object is its region characteristic information].

14. Regarding claim 9, Tsukada further discloses that the correction function setting device setting any one of the correction function table of a plurality of the different correction function tables with respect to one or a plurality of the image object regions and setting the correction function for correcting the pixel information of the pixels constituting the image object region based on the region characteristic information of the image object region and the correction function table that was thus set [Fig. 7 & 8; Col. 10, lines 6-29; note that Fig. 7 is a correction function table and that there is one such table for each object].

15. Regarding claim 10, and similarly claims 15 and 18, the combined invention of Herley, Tsukada and Miyabata further discloses:

- a boundary region detecting device that detects, based on prescribed region recognition conditions, as a boundary region, the pixel group which is the pixel group present on a boundary of the two adjacent image object regions
[Herley: Fig. 6; paragraphs 5, 18-21 and 51; especially paragraphs 18-19.
Note that the determined background is considered an object itself.]
- that the boundary region also includes pixels in the vicinity of the boundary and is composed of the pixels having characteristics intermediate between the respective characteristics of the two image object regions

[Miyabata: Fig. 11a; Col. 22, lines 16- 32. Note that pixels between n1 and n2 are considered to be in the boundary region]

16. Regarding claim 11, note that per paragraph 18 of Herley a boundary pixel is sandwiched between two objects (note that background is by itself an object region); therefore claim 11 is rejected based on this disclosure and along with the analysis of claim 10 above

17. Regarding claim 12, Miyabata further discloses

- the correction function setting device correcting the pixel information of the pixels constituting the boundary region based on a first correction function which is the correction function set by the region characteristic information of the first image object region and a second correction function which is the correction function set by the region characteristic information of the second image object region, where the first image object region and second image object region are the two image object regions sandwiching the boundary region

[Figs. 8b (color correcting region left of the boundary), 9b (color correcting region right of the boundary), 11a & 25 (color correcting boundary pixels); Col. 15, lines 32-62; Col. 17, lines 5-35; Col. 20, line 49-Col. 22, line 32. Note that pixels between (but not including) n1 and n2 are considered to be in the boundary area and n1 and n2 (belonging to two surrounding regions) are on either side of the boundary area (see Fig. 11a) that have

already been color corrected (see 8b and 9b). Note further that equation on line 15 of column 21 corrects boundary portion pixels based on the values CD1 and CD2 of pixels n1 and n2, respectively, which are in the two surrounding regions. Additionally, per the analysis of claim 1 Tsukada discloses color correcting different regions based on their region characteristics therefore the border pixel correction to thus corrected regions will be based on their corresponding correction functions]

Conclusion and Contact Information

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Bhaskar (US 6,393,148) – discloses using average and standard deviation of luminance and/or colors to determine the level of improvement

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUBIN HUNG whose telephone number is (571)272-7451. The examiner can normally be reached on 7:30 - 4:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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20. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Yubin Hung
Primary Examiner
Art Unit 2624

/Yubin Hung/
Primary Examiner, Art Unit 2624

March 29, 2009